

### Features

- Total or Speciated (Option)
- Continuous
- Rapid Response
- 2 Alarm Levels  
1 Master Fault Alarm
- 4-20 mA Outputs
- RS-232C/485 Outputs
- Onboard Windows CE  
Touchscreen Computer
- Stainless Steel  
Enclosure
- Separate Electronics &  
Liquid Compartments
- Easy to Operate and  
Maintain

### Options

- Speciation Module
- Auto-Validation
- Auto-Cal
- NEMA 4X / IP66



HRVOC Analyzer

Highly  
Reactive  
Volatile  
Organic  
Compounds

### Description

The StarVOC HRVOC analyzer provides automatic, on-line analysis of total or speciated volatile organic compounds for compliance with EPA and local emission regulations. The new rules do not require speciation, if an HRVOC analyzer is used, thus eliminating the complexity, cost, and interference problems of GC/FID analysis.

A speciation module is offered as an option to facilitate plant troubleshooting, during “release” events. Automatic validation and reporting, automatic calibration, and onboard historical data archives provide all appropriate certification records for future government review.

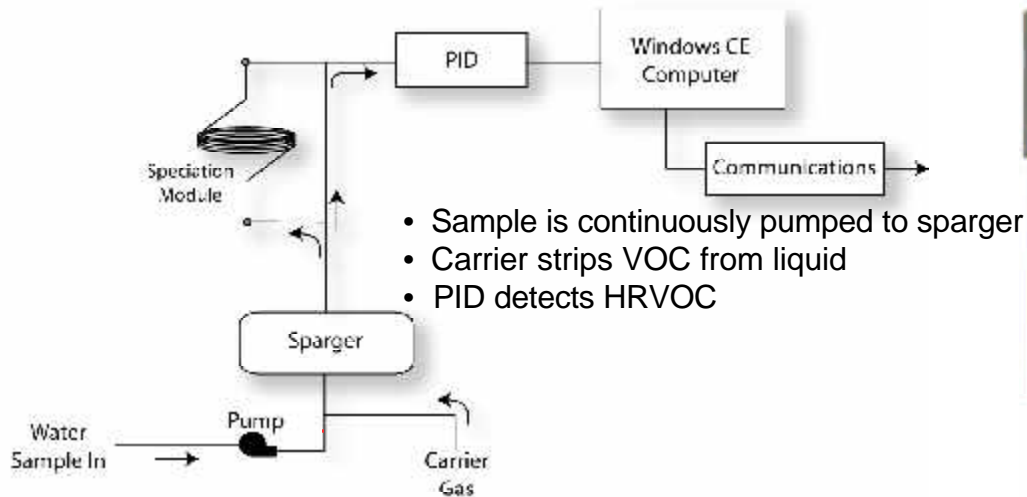
The analyzer is totally automatic. No expensive or hazardous gases are needed and the use of the familiar Microsoft Windows operating system affords ease of operation, training, and service.

### Design & Q.A. Approach

System design affords totally automatic compliance testing, calibrating, and data reporting through the use of its own operating platform. It utilizes approved water sampling techniques for cooling tower applications and a combined calorimeter/HRVOC analyzer system for flares.

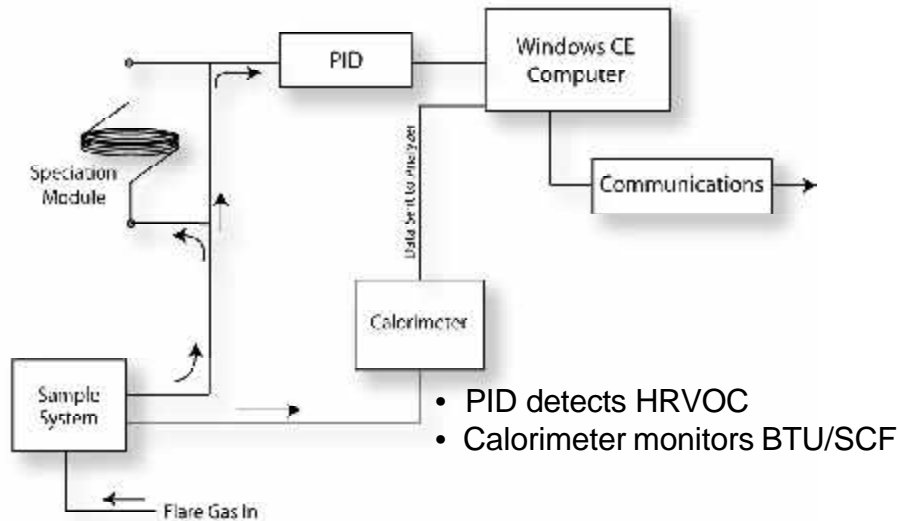
Quality Assurance and Quality Control requirements are maintained automatically, primarily through onboard computer control and data archives. Star has developed a comprehensive QA plan and Validation Protocols, with defensible reporting on a continuous basis.

# Cooling Tower System



**Optional Speciation Module** allows individual HRVOC species analysis through the use of an internal GC separation column. This is especially helpful in quickly determining process leaks for rapid remediation. It avoids alternative “grab” sampling techniques and laboratory GC analysis. Automatic switching to the GC column is accomplished by computer control after specified total HRVOC levels are exceeded.

# Flare System



(3-Sided Shelter Shown)

## ***Auto-Validation/Calibration Utilities are Standard***

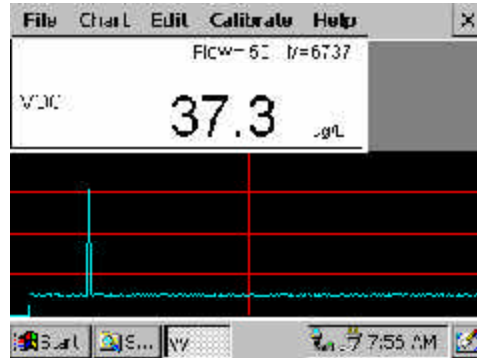
The NAMUR specified validation technique is used, whereby on computer command a calibration standard is automatically introduced to the analyzer and the response is compared to the previous analyzer calibration. If the response falls outside specified performance limits, either a “Maintenance Request” or a “Fault” alarm is activated, depending on preset tolerances. Auto-Calibration is computer controlled and is performed on a multi-level basis:

1. Sensor
2. Analyzer “end-to-end” Total HRVOC”
3. Analyzer “end-to-end” speciated VOC (if onboard Speciation Module used).

# Advanced Technology, Today and Tomorrow

Star analyzers use Microsoft Windows CE to ensure that you are always up-to-date with the latest technologies. Operator training is minimal. By incorporating a modular software design, Star is capable of offering advanced options unavailable elsewhere.

## -Microsoft Windows CE Computer-

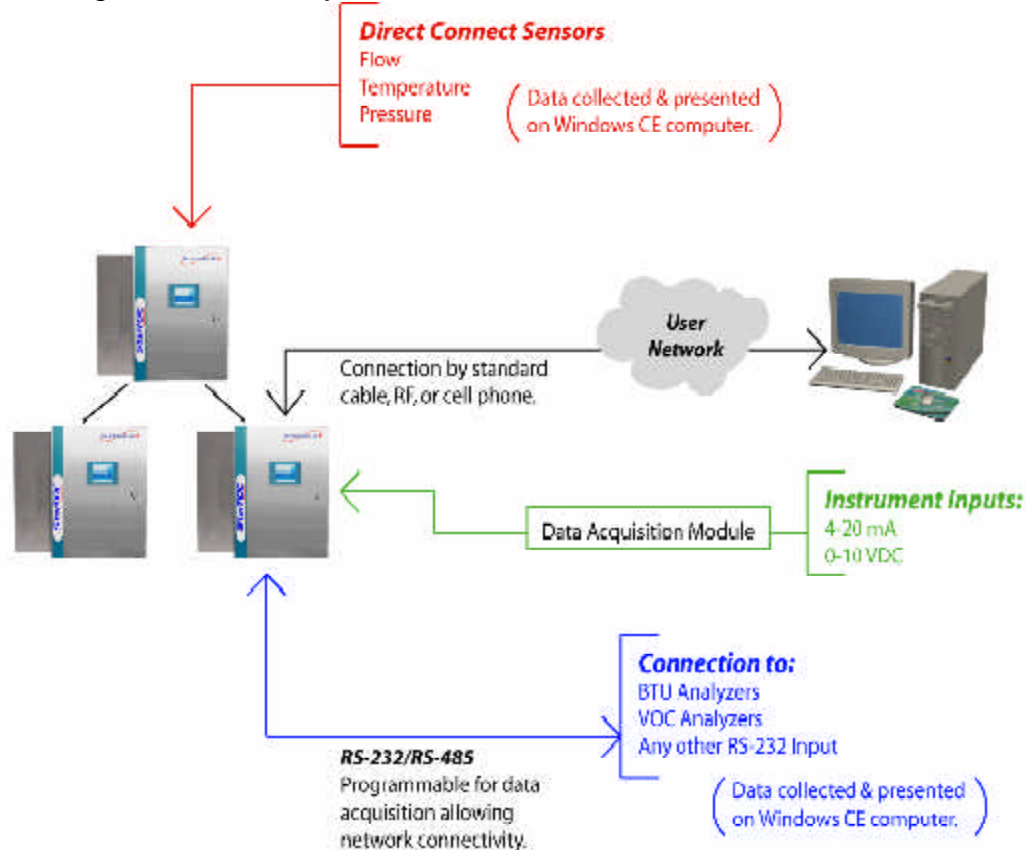


Windows CE Computer  
with Touch Screen Control

- Touch Screen
- Paperless Chart Recorder
- VGA Color Display
- PCMCIA Slot
- Network Ready
- Solid State Data Storage

## Network Enabled

Star's utilization of an onboard Windows CE computer allows direct networking. Central control of analyzer operation and data management are easily facilitated.

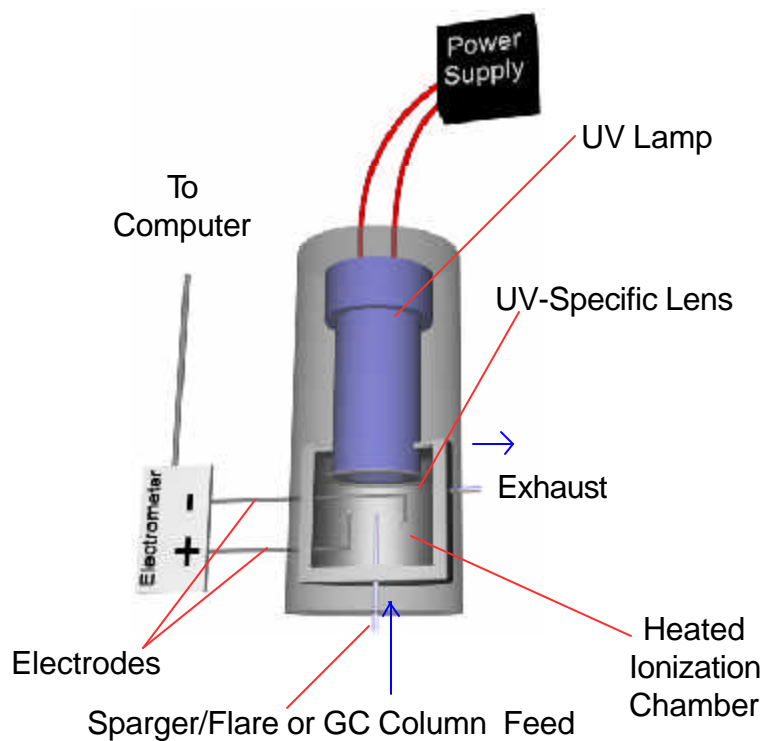


## Photoionization Detector (PID) - Lamp design life of 1 year

The photoionization detector is the VOC detector of choice by the USEPA, because of its superior sensitivity (100:1 over FID) and selectivity. It is mandated for use in the following methods:

TO-14A	502.1
602	502.2
8020A	

The PID UV lamp irradiates incoming gas from either the sparger or flare directly (VOC-Total) or the column (VOC-Specified). The UV energy ionizes the molecules, producing an ionic current ( $R + h\nu \rightarrow R^+ + e^-$ ) which is measured by the electrometer and computed in units of ppbw.



**NOTE:** Because the PID is non-destructive, an FID or other detector may be placed in series with it, offering dual detectors

## Installation Requirements

Star furnishes recommended installation drawings. The user must provide the following:

1. Electrical source (110/220 VAC 300 watt service with external cutoff switch).
2. Sample flow of a minimum of 25mL/minute. A fast bypass loop is recommended.
3. Gravity fed drain with air break.
4. A source of hydrocarbon-free air with a maximum flow rate of 100cc/min @ 15 psig.
5. Calibration gases, as specified.

## Start-Up Assistance, Installation and Operation Certification

Star's distribution network offers complete installation assistance and operator training. Star also offers an on-site Certification Program, whereby Star will provide Installation and Operation Protocols (IOPs) and Standard Operating Procedures (SOPs) and will factory certify both the installation and system performance as fully compliant with government regulations.

## Parts Exchange Service Program

The STAR PARTS EXCHANGE SERVICE PROGRAM provides the CUSTOMER with the fastest, most reliable and cost effective method to service any malfunctioning component. **All modules can easily be replaced within 15 minutes, allowing "up time" functionality on the order of 98%.**

# Specifications

Nominal at 25°C. Subject to custom application requirements.

<b>Measuring Ranges</b>	From 1 pptw (user specified)
<b>Response Time</b>	from 10 seconds
<b>Analog Output</b>	4-20 mA
<b>Digital Output</b>	RS-232C; RS-485
<b>Relay Outputs</b>	2 VOC adjustable level alarms 1 master fault alarm
<b>Display/Computer</b>	Microsoft Windows CE Computer; Paperless Chart Recorder; 2 Year Data Storage
<b>Power Supply</b>	110/220 VAC 300 watt service recommended
<b>Enclosure (Wall Mount)</b>	Stainless Steel (NEMA 4X/IP66 Option)
<b>Dimensions (HxWxD)</b>	61x51x28 (cm) 24x20x11 (in.)
<b>Weight</b>	39 Kg 85 Lbs.

# Ordering Information

<b>Description</b>	<b>Order number</b>
<b>VOC Configuration, Windows CE Computer</b> (Can be field upgraded with Speciation Module)  Single Stream Analyzer, Auto-Validation, Auto-Calibrate, Paperless Chart Display, Historical Records Digitally Stored Up to Two Years	<b>VOC-1002</b>
<b>Speciation Module</b> Provides a single separation column & valving, sufficient for analysis of several known species of target VOC constituents. Includes all software & factory applications engineering, if VOC species data are provided by the customer.	<b>VSM-1</b>
<b>Multi-Stream Sequencer to Multiplex Up to 4 Streams, Std.</b> <i>Note: Additional streams may be added, but not recommended, due to system response time.</i>	
2-Stream Sequencer	<b>MSS-2</b>
3-Stream Sequencer	<b>MSS-3</b>
4-Stream Sequencer	<b>MSS-4</b>
<b>NEMA 4X / IP66 Stainless Steel Enclosure</b>	<b>IP66</b>

\* Windows CE Computer Option with Touch Screen VGA Color Display, Solid-State Data Storage, Paperless Chart Recorder, PCMCIA Slot, Network Ready, RS-485 MODBUS

## ***Pre-Engineered System Packages and Enclosures***

Star provides pre-engineered and custom systems, including small shelters with all utilities installed and ready to be delivered to your site.



**Star Instruments, Inc.**  
**100 Park Avenue**  
**League City, TX 77573 USA**  
**Phone (281) 338-1388 Fax (281)332-5609**  
**Web: [www.starinstruments.com](http://www.starinstruments.com)**  
**Email: [sales@starinstruments.com](mailto:sales@starinstruments.com)**